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The Phase of Illness Paradigm: A Checklist Centric Model to Improve Patient Care in the Burn Intensive Care Unit

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14. ABSTRACT We will develop the checklists for the POIP using cognitive systems engineering methodologies and iteration. To validate the model, we will measure clinician perception of patient condition and care priorities; we will observe the frequencies that healthcare teams complete key elements of patient care; and we will measure communication, teamwork, cognitive work load, and provider quality of life before and after units implement the POIP. To assess the model's effect, we will observe patient outcomes and complication rates before and after units implement the POIP. To further assess the model's capacity to rapidly incorporate new knowledge into burn critical care, we will update the phase specific checklists six months after initial implementation and continue data collection.				
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1. INTRODUCTION:

This project seeks to validate the phases of Illness paradigm (POIP) (Pamplin 2011) and its effect on a variety of measures in three Burn ICUs. This paradigm describes patients with similar severities of illness for which clinicians define standard goals of care, treatment objectives, and specific care tasks. Checklists may help to identify a patient's severity of illness and priorities of care as they progress or regress through the continuum of care in the ICU. Within each phase, phase-specific checklists may help ensure adherence to local protocols, best practices, clinical guidelines, and specific care bundles. These checklists may help to standardize supportive care elements such as types of monitoring, frequency and type of laboratory assessment, sedation strategies, modes of mechanical ventilation, and physical therapy interventions. Through this standardization, the POIP may create a shared mental model of patient movement through the Burn ICU that could possibly enhance distributed cognition (Hutchins 2000) and assist the work of the multidisciplinary ICU care team. The objectives of this program are as follows:

- a. Understand the work domain in the Burn ICU in terms of patient condition, patient progress, and dependent clinician behaviors in order to create ecologically valid checklists that support clinician work including decision making according to the Phases of Illness Paradigm.
- b. Validate the Phases of Illness Paradigm and its effect on a variety of measures in three Burn ICUs
- c. Implement the POIP to improve the multidisciplinary burn ICU team's understanding of patient severity of illness, daily care priorities, and anticipated care goals.

2. KEYWORDS:

Team Communication, Burn Intensive Care, Severity of Illness, Care Goals, Clinical Decision Support Tools, Phases of Illness, Cognitive Workload, Quality of Life, Card Sorting

3. OVERALL PROJECT SUMMARY:

The overall objective of this research project is to understand the work domain in the burn intensive care unit in terms of patient condition, patient progress, and dependent clinician behaviors in order to create ecologically valid checklists that support clinician work according to the Phases of Illness Paradigm. To that end, we summarize our current progress according to specified tasks after year one of this three-year project.

First, it is important to acknowledge the significant delays this project has experienced due to funding being delayed in contracting and the principle investigator's deployment to Operation Enduring Freedom. Although the grant was approved in June 2012, contracted funding was not released until March 2013. The PI deployed in March 2013 and returned in November 2013. The core site protocol was initially submitted to the IRB in September 2013, but was not approved until December 2013. The core site (SAMMC/USAISR) has completed

task one, however only one additional site, Memorial Herman Hospital, John S. Dunn, Sr. Burn Center, Houston, TX, has been approved to start data collection. This approval was received in March 2014. The University of Texas Southwestern (Parkland) Burn Center, Dallas, TX submitted the core protocol with local changes to their IRB in February and is awaiting a decision. This protocol will then need to undergo second level review before starting data collection. The principle investigator intends to mitigate these delays as outlined below.

TASK ONE: Describe patient progress through intensive care from patient-centric and provider-centric perspectives. This will include identification of patient characteristics, provider perspectives, care priorities, therapeutics, activities, and care team goals at various times during a patient's progress through intensive care. The methods used to collect this data were the condition understanding survey (CUS) and the clinician card sort tool (CCST).

The CUS is a survey that asks clinicians to identify a patient's severity of illness on a scale between "Most sick, could die today" and "Least sick, could transfer today," and then to describe their daily activities for that patient according to their top four priorities of goals, objectives, and tasks. Goals were defined as a *short-term* desirable outcome for the patient. An objective was defined as a means to an end or a means to achieve a goal. A task was defined as an assigned piece of work that should be completed in a specific amount of time to support or complete an objective. Severity of illness and top priorities for goals, objectives, and tasks were collected for the patient today and as the clinician anticipated them for the following day. The responses are then coded by the researchers (principle investigator and core site research nurse).

Findings: Data analysis for the CUS surveys is ongoing and requires the data from all participating sites before final conclusions can be made. Preliminary data from the core site suggests the following, preliminary conclusions:

- 1) Although definitions for patient "goals," healthcare team "objectives," and clinicians "tasks" were provided, clinicians have difficulty phrasing daily care priorities in these terms and often combine these items in terms when identifying treatments for patients. An example of a written "goal" is as follows:
 - a. "To tolerate tilt at 60 degrees for weight bearing and pulmonary rehab." This statement from an occupational therapist contains the following six coded elements:
 - i. Goals: 1. Maintain or Improve functionality and 2. Maintain or Improve Lung Function
 - ii. Objective: 1. Weight bearing to improve/maintain functionality and 2. Physical Activity for Pulmonary Rehab to improve/maintain lung function
 - iii. Tasks: 1. Tilt Table for weight bearing for a specified time (actor not specified) and 2. Tilt Table for Pulmonary Rehab (actor not specified)
- 2) Clinicians' perspectives on priorities of care are usually focused on their own specialty. In other words, nurses, physicians, rehabilitation specialties, respiratory therapists, nutritionists, etc. usually have their own, specialty specific agenda which they prioritize

over, or in exclusion of, other care elements for any given patient on any given day. Examples of clinician top “goals” for the same patient are follows (uncoded):

- a. Occupational Therapist: “To tolerate tilt at 60 degrees for weight bearing and pulmonary rehab,” “To tolerate sitting in TLC for increased activity tolerance,” “To tolerate passive range of motion (ROM) active assist ROM to increase functional use of B UE/LE,” and “To tolerate coban wrap to B hands for proper edema management to prevent long term joint contracture.”
- b. Dietician: “tolerate trophic TF,” and “correct free water deficit”
- c. Nurse: “maintain oxygenation and ventilation,” “monitor for hypovolemia,” “monitor for electrolyte balance,” and “balance activity and rest.”
- d. Physician in training: “Liberate from vent.”
- e. Burn surgeon: “Liberate from vent,” and “begin enteral feeding.”

3) Although the healthcare team works closely together, conducts daily multidisciplinary rounds in an effort to create a shared understanding of the patient condition and care plan, individual clinicians prioritize care elements quite differently. Coding of the above clinician described “goals” yielded 15 identified goals (shown below), 13 objectives (not shown), and only 7 identified tasks (not shown). Of the coded goals, only three were identified by more than one clinician (in parentheses). These differences of perspective may cause communication failures, delays in care, missed opportunities, and conflicts within the care team, including between clinicians and patients or their family members.

1. Independent Breathing (2)
2. Acceptable electrolyte concentrations (2)
3. Adequate Nutrition (2)
4. Activity Tolerance
5. Adequate Oxygenation
6. Adequate pH/ventilation
7. Adequate Sleep
8. Adequate Tissue Perfusion
9. Enteral feeding
10. Functional Use of Upper and/or Lower Extremities
11. Maintain or Improve functionality
12. Maintain or Improve Lung Function
13. Normal Plasma Sodium Concentration
14. Prevent Joint Contracture
15. Rest

The CCST was developed through serial interviews with experts in burn critical care at the core site. The interviews discovered 10 categories of information that clinicians use to perceive patient condition (“features”) and 9 categories of care elements (“treatment”) that were used to manage patient care. This resulted in 97 total cards, 67 features and 30 treatments. During the card sorts, clinicians were asked to identify a patient’s severity of illness on a scale from “could die today” to “could leave the ICU today.” Clinicians then reviewed either feature or treatment cards and selected cards they considered important to how they identified the patient’s severity of illness and what treatments should be given to that type of patient. Clinicians were allowed to create their own cards if a particular feature or treatment was not available that they felt was important. The ultimate card sort is a visual representation of the priority clinicians place on information or treatment categories they use to understand and care for patients.

The CCST helped clinicians “unpack” their complex, intuitive understanding of patients and how they prioritize information and treatments. Using this method, clinicians are able to identify a patient’s severity of illness, the information they use to make this identification, and what treatments they consider important.

CCST data collection is complete at the core site and will begin on approximately May 5 at the Houston site. The data from the core site continues to be analyzed to understand differences between clinician perspectives about patient condition and treatment priorities. The available data was reviewed by the principle investigator to identify meaningful patterns of features that identify patient severity of illness and treatments that clinicians prioritize accordingly. This review facilitated the creation of initial representations of a cognitive aid to help clinicians identify a patient’s condition and potential treatment elements. **Key findings** from this data are that

1. Clinicians consider patient condition along a continuum versus a discrete phase
2. Treatment priorities and treatments elements do change according to clinician perception of patient condition along this continuum.
3. There is considerable overlap between how clinicians perceive patient condition
4. There are considerable disparities between clinicians with respect to treatment priorities.

These observations led to discussion between the principle investigators and the projects cognitive systems engineering (CSE) consultant, Dr. Nemeth, regarding the project assumption that we could apply discrete phases of care to patients within the burn ICU: *Describing discrete phases of patient condition or treatments was NOT supported by the data.* Instead, the data necessitated further investigation and development of a model that 1) acknowledges that the changes in patient condition as they pass through critical illness is a continuous, not discrete phenomena, 2) allows clinicians to perceive patients differently along this continuum, 3) facilitates dialogue between clinicians about these differences in perception, 4) provides clinicians with recommendations and/or considerations of what to do for like patients at any point on the continuum of care. The final two aspects of the model may help novice clinicians better communicate with and/or understand the perspectives and priorities of more experienced clinicians.

Using these findings, the principle investigator in collaboration with the CSE consultant developed prototype cognitive aides for testing during task two, checklist development. Checklists tools may take many forms and for the purpose of this project, the investigative team has started calling them by a more accurate term – cognitive aids. This change in terminology has come about for a variety of reasons, the most important of which is the negative connotation that “checklist” has in health care environments. Clinicians refuse to believe, and rightly so, that patient care is *only* as complicated as flying a plane. Instead, patient care is complex, emergent, and non-linear. Indeed, others have recently reported about the realities of checklists – they do not change clinician behavior and do not improve patient care *alone* (Urbach 2014). Instead, it is this research team’s belief, that these benefits are only realized when the underlying medical culture using of the team using the checklist changes to support improved communication. Tools can help teams change. Our previous use of daily checklists and read-back task lists empowered nurses to speak up and participate in the multidisciplinary rounds process, and we anticipate a similar effect of this tool on other clinician groups, particularly the novice and non-nurse, non-physician clinicians in the burn ICU.

The prototype cognitive aids are being used to gain insight into their potential benefit, harms, and challenges during the group interview process discussed below.

The challenges that this project has faced during task one are as follows:

- Difficulty recruiting the specified subject population. It has been difficult to recruit the specified number of subjects from each professional background outlined in the core protocol because clinicians are often busy performing patient care activities, and because the make-up of the healthcare team changes from month-to-month and between institutions. For example, “burn fellows” and “intensivists” are not always scheduled to work in the burn ICUs.

Unfortunately, the initial outline for subject recruitment specified specific numbers and types of clinicians to complete surveys and interviews. This was the wrong plan, for the type of qualitative research conducted in this protocol. Instead of focusing on volume of subjects, the research team has shifted to focusing on breadth of subject recruiting, in order to gain insight from clinicians of multiple professional backgrounds, and on depth of understanding the issues at hand from the clinicians available: information saturation vice quantity of information. It is better to understand the underlying reasons for clinician decision-making and information use than to artificially describe the phenotype of these decisions. The first may produce an enduring tool that helps clinicians; the later will likely produce a tool that is only effective as long as resources are available to support its use. We believe the available data from the subjects recruited accurately reflect the domain semantics and underlying preferences of the work domains we are studying and will yield effective tools that aid clinical decision making.

- Delays. Data collection at all three participating sites was delayed due to delays in contracting, the interruption caused by the deployment of the principle investigator, and IRB review. The asynchronous start of the collaborating sites has allowed the core site to optimize their data analysis methods. This should shorten the time from data collection to prototype cognitive aid at the collaborating sites. Furthermore, the research team plans to shorten the Delphi consensus process of tool development.

This will enable the collaborating sites to “catch-up” to the core site. Finally, the time from tool implementation (TASK THREE) to reviewing and updating the tool (TASK FOUR) can be shortened without risk to the project objectives. This will allow all research sites to complete the project on time.

TASK TWO: Using the information discovered in task 1, create a representation that maps patient progress through the ICU in the form of checklists that identify patients’ and care team goals, objectives, and tasks that are commonly associated with a patient’s current condition (i.e. “phase of illness”).

This task is ongoing at the core site but has not yet begun at the collaborating sites. Clinician card sort (CCST) data was used by the principle investigator in consultation with the consulting cognitive systems engineer, Dr. Nemeth, to create an initial prototype of a cognitive aid to assist clinicians with identification of patient condition and associated care goals. Instead of discrete “phases of illness,” card sort data suggested that clinicians perceive patient progress and associated care elements along a continuum. The cognitive aid must reflect this understanding. The prototype cognitive aids can be found in the appendix under the “Group Interview Toolkit” for groups 1-3 (version 1) and groups 4-6 (version 2). These prototypes will be used during the group interviews that are a part of this TASK to validate the model and demonstrate effectiveness. Also, CCST data suggested that some care elements do not vary according to patient condition. Instead, clinician goals for these care elements are the same across the spectrum of patient severity of illness. Examples of this are that patients should be on full nutritional support and should participate in the most rehabilitation tolerable. A bedside tool, possibly in the form of an itemized checklist, might best support these aspects of patient care.

If the model proves valid and the prototype helps clinicians, we will use the Delphi method of consensus building simplify and strengthen the prototype cognitive aid(s). Through this process we will eliminate unnecessary questions, modify descriptive terminology, and identify the best order of questions. The design of the tool(s) will be tested and modified through consensus building techniques as well. The tool(s) will be posted in the burn ICUs for all clinicians to comment on and provide suggestions for the final design/appearance.

The final tool(s) will be discussed during group interviews to determine the where, when, and how of their use within the work domain of the ICU. Use of the final version of the tool will be pilot tested in the ICU before clinical implementation. It is important to note that while the tool will likely be similar at each of the participating sites, its content and use may vary. This is necessary to maintain the tool’s ecological validity.

TASK THREE: Implement the phases of illness paradigm in three burn intensive care units and assess its impact on clinical care, provider understanding of patient status and care priorities, patient outcomes, and effect on communication, teamwork, quality of life, and cognitive workload. Comparative data for providers and patients will be obtained/initiated at the start of the project (month 1).

The primary objective of this project is to improve the multidisciplinary burn ICU team's understanding of patient severity of illness, daily care priorities, and anticipated care goals. The tools we create will effectively identify discordance between patient condition and current treatments, offer clinicians recommendations or considerations for concordant treatments, and provide a framework to discuss differences between active and anticipated plans of care. Using this model, we anticipate improvement in teamwork and communication, which should decrease clinician cognitive workload and improve patient outcome.

Baseline perspectives have been evaluated at the core research site and at the Houston site using the TeamSTEPPS Teamwork Perceptions Questionnaire, the Condition Understanding Survey (CUS), and the NASA Task Load Index (TLX) for understanding patient condition and priorities of care after change of shift and multidisciplinary team rounds. This baseline data will be used for comparison after implementation of the POIP cognitive aid.

Patient associated outcomes, the accuracy, reliability, and consistency of care elements will be assessed using a retrospective protocol using a before-and-after design.

TASK FOUR: Review and update the Phases of Illness Paradigm (POIP) checklists and assess the time it takes for new checklist items to be reliably completed without new/additional education for the healthcare team.

Artifacts such as the cognitive aids that support the PIOP must be regularly updated to maintain their relevancy to the work they intend to support. Consequently, regular review and update of the POIP is necessary to evaluate its effectiveness as a malleable tool. We will collect data and observations about checklist use after their implementation and will nominate new checklist items or propose removal of old checklist items during the first six months of use. The project team will use a similar approach, albeit more rapid, as described in task #2, to iteratively update the phase-based checklists. Updated checklists will be introduced without additional education or resources. We anticipate that team expectations and processes of care will change rapidly according to the updated checklist elements. We anticipate conducting this review and update before the six month time point as previously described in order to stay within the project timeline. We do not anticipate that this deviation will affect the research findings.

4. KEY RESEARCH ACCOMPLISHMENTS:

- The core research protocol was approved in December 2013.
- Two of three research sites have started data collection; the third is waiting on local IRB approval of the research protocol.
- Initial data collection for this project is at its early stages.
- Two sites have collected baseline data about clinician perspectives of patient condition and corresponding care goals/objective/tasks, communication and teamwork, and workload identifying patient condition and goals of care has been

collected using the condition understanding survey, TeamSTEPPS Teamwork Perceptions Questionnaire, and the NASA TLX tool respectively.

- The core site has completed TASK ONE and has started TASK TWO and TASK THREE.
- The Houston site has started TASK ONE and TASK THREE
- Using clinician card sort data, the core site has developed prototype cognitive aids that may support clinician decision-making in the burn ICU. These cognitive aids are variations of checklists.
- Using initial data, the core site has started group interviews. Data from these interviews is encouraging and preliminarily support the validity of a phases of illness model, perhaps more accurately terms a “spectrum” of illness model, that helps clinicians identify patient condition and corresponding care goals/objective/tasks more consistently or helps clinicians to more effectively dialogue about them.

5. CONCLUSION

At this interim point, definitive conclusions about the research cannot be made, except to re-iterate the effectiveness of card sorting at “unpacking” clinician perceptions about patient condition and treatment priorities. Preliminary data suggest that card sorting is a relatively simple method to help clinicians “unpack” their complex, intuitive understanding of patients and how they prioritize information and treatments. Anticipated deliverables for this project include:

- A description of the information that clinicians of different backgrounds use to understand patient condition.
- A description of the different perspectives that clinicians have with respect to patient condition and corresponding treatments between clinicians from different backgrounds, clinicians of different experience levels, and clinicians from different institutions.

6. PUBLICATIONS, ABSTRACTS, AND PRESENTATIONS:

Submitted abstracts to the 2014 Military Health Research Symposium:

1. Pamplin, J.C., Murray, S.J., Chung, K., Mann-Salinas, E.A. & Nemeth, C. *Card Sorts Help “Unpack” Clinician Perspectives on Patient Condition and Treatment Priorities.*
2. Murray, S.J., Chung, K., Mann-Salinas, E.A., & Caldwell, N. *Developing Cognitive Aides according to the Phases of Illness Paradigm for use in the Burn ICU.*

7. REPORTABLE OUTCOMES:

There are no reportable outcomes at this time.

8. REFERENCES:

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9. APPENDICES:

Appendix A. Quad Chart

Appendix B. Abstracts: Item 1

Appendix C. Group Interview Tools: Items 2-8 (Items 4 & 5 include prototype cognitive aids)

The Phase of Illness Paradigm: A Checklist Centric Model to Improve Patient Care in the Burn Intensive Care Unit
 ERMS/Log Number: 12340054
 W81XWH-13-2-0011



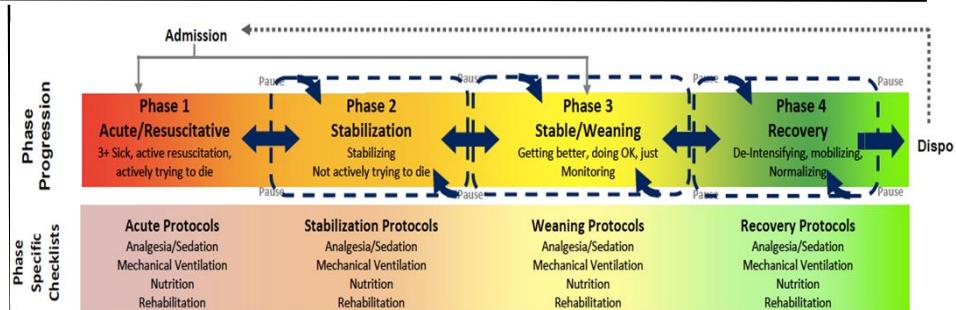
PI: LTC Jeremy Pamplin, MD Org: The Geneva Foundation/San Antonio Military Medical Center Award Amount: \$540,555

Study/Product Aim(s)

- A validated POIP model.
- Improved healthcare team understanding of patient condition and priorities of care.
- Improved task completion according to patient phase of illness improves outcomes and reduces complications.
- More reliable, consistent, and efficient care will reduce costs.
- The POIP will improve communication and teamwork and will reduce cognitive load. These benefits will improve clinician work related quality of life.

Approach and Military Relevance

This multicenter, prospective, case-matched cohort study will improve the care of critically ill burn patients. Lessons learned from the application of this paradigm may be applied to other MHS patient populations to improve evidence based care, decrease communication failures, improve patient safety, better use resources, and reduce costs.



The Phases- of- Illness Paradigm (POIP). Patients enter the ICU for organ support or monitoring. Movement through the continuum is fluid, timeless, and directionless. Patients getting better move right and patients getting worse move left. Checklists identify supportive care goals and therapies. The "Pause Cloud" is an "in-between" phase when it is unclear what "direction" a patient is moving (i.e. could be getting better or getting worse). Supportive care goals in a pause are the same as for the patient's most recent phase.

Timeline and Cost

Activities	13	14	15
Checklist Development			
POIP Implementation			
Data Collection			
Ongoing Review and Checklist Update			
Estimated Budget (\$541K)	\$156K	\$207K	\$178K

Goals/Milestones

CY13 – Project Initiated

- Data collection: TeamSTEPPS, NASA-TLX, CUS and CCST – completed at core site

- Group Interviews – 75% completed at core site

CY14 – POIP Applied and Data Collection Initiated

- Iterative Checklist Development – Draft version complete at Core Site

- POIP Education and Implementation: 4-24 Aug 14 at core site

- Data Collection (Retrospective)

- POIP Checklists Reviewed and Revised

CY15 – Project Completed

- Updated POIP Checklists introduced

- Data collection completed

Updated: 28 April 2014

Appendix B.

Title: Card Sorts Help “Unpack” Clinician Perspectives on Patient Condition and Treatment Priorities.

Background: Patient care in the burn intensive care unit (BICU) is complex and understanding clinician decision making is challenging. We developed a card sort tool for researchers to investigate how clinicians perceive patient condition and prioritize care.

Methods: The card sort was developed through serial interviews with experts in burn critical care. The interviews discovered 10 categories of information that clinicians use to perceive patient condition (“features”) and 9 categories of care elements (“treatments”) that were used to manage patient care. This resulted in 97 total cards, 67 features and 30 treatments. During card sorts, clinicians were asked to identify a patient’s severity of illness on a scale from “could die today” to “could leave the ICU today.” Clinicians then reviewed either feature or treatment cards and selected cards they considered important to how they identified the patient’s severity of illness and what treatments should be given to that type of patient. The ultimate card sort is a visual representation of the priority clinicians place on information or treatment categories they use to understand and care for patients.

Results: 60 card sorts were performed on clinicians from three backgrounds (nurse, physician, other) caring for 19 patients. Clinician experience ranged from 0-39 years. Card sorts took on average 22 minutes to complete. Clinicians identified identical feature and treatment cards to describe patient condition and care priorities 33% (IQR 20-50%) and 50% (IQR 25%-60%) of the time respectively. Clinicians identified severity of illness similarly for all but one patient.

Conclusion: Card sorting is a simple, effective method to help clinicians “unpack” their complex, intuitive understanding of patients and how they prioritize information and treatment. Clinicians are able to identify a patient’s severity of illness, the information they use to make this identification, and what treatments they consider important.

Title: Developing Cognitive Aides according to the Phases of Illness Paradigm for use in the Burn ICU.

Background: Care in complex environments such as the Intensive Care Unit (ICU) is provided by a team of individuals from different professional backgrounds each with different perspectives. Cognitive aides that help clinicians make informed decisions efficiently, reliably, and accurately would be beneficial to patient care. Checklists are cognitive aides that have been demonstrated to reduce morbidity and improve outcomes. Care in the Burn ICU is more complex than other ICUs due to the extended duration of burn care and the increased number of specialists involved in decision making. An effective aide must be ecologically valid in a particular work domain. This research was designed to develop an ecologically valid cognitive aide, such as a checklist, for three regional Burn ICUs.

Methods

This multicenter, prospective, observational before and after study intends to development, implement, and assessment a cognitive aide for clinicians at in three BICUs that supports the phases of illness paradigm. Clinicians will be guided through a process that elicits their perception of patient condition and priorities of care. This process includes a card sort and group interviews designed to discover disparities between clinician perceptions and intended actions, the impact these have on patient care, and methods to resolve conflicts and improve decision making.

Results

The result of this work will be a cognitive aide that helps clinicians identify patient condition and prioritize care accordingly. Use of this tool will be implemented as a process improvement project and its impact on individual cognitive workload, team communication, reliability of treatments, and patient outcomes will be assessed.

Conclusion

BICU clinicians may think about patients in ways that are different from each other. The method described above will develop an ecologically valid cognitive aide to support work in the BICU by decreasing cognitive load, improving communication, and making care more reliable.

Appendix C.

POIP First Group Interview Guide, groups 1-3

Cases 1 & 2

Introduction

This is a research project intended to understand how clinicians perceive patient condition and what treatments they give to patients accordingly. For approximately the next 60 min, we are going to review several cases and ask you to individually complete some questions about these cases. We will then discuss your responses. After our discussion, we will use a tool developed from our analysis of the preliminary that many of you have provided through the card sort exercises. We will then ask you to provide some feedback and, if time permits, we will discuss your feedback. If you wish to leave or stop participating at any time you are free to do so, your participation is completely voluntary (please see the approved interview consent script). Are there any questions?

Part I

Step 1: Give Group Interview Toolkit & Cases for Groups 1-3 to participants. Ask them to complete the demographics on pages where it appears. Present a case. Ask clinicians to place the patient on the Case 1 severity of illness scale. Remind them that “**there is no right or wrong answer, only your perception of the patient.**” (3 min)

Step 2: Turn to the feature questions. Review questions verbally with group and then ask “**After reviewing these questions, would you change your original score. Please record your new score, even if it did not change from the original, on scale ‘Case 1a.’**” Remind them that “**there is no right or wrong answer, only your perception of the patient.**” (1 min)

Step 3: Turn to the list of treatment questions. Ask them to **prioritize and describe the treatments as they would provide them for this patient. If they have no opinion about a specific treatment, leave it blank.** Remind them that “**there is no right or wrong answer, only your perception of you would do.**” (7 min)

Step 4: Turn to the second case. Present the case and allow the clinicians to complete steps 1-3 on their own and to look up when they are done. They have 7 min to complete.

Part II

Step 5: **Go back to the first page of the booklet.** Have clinicians place numbers in the available boxes above the scales (10 through 1). Ask them to share the number representing the case locations on the severity of illness scale with the group before considering the questions provided in step 2. Record Discuss differences/outliers for the most disparate case only. “**WHY did you place this patient where you did?**” Take notes on discussion.

- Focus questions re: feature on most discrepant/disparate values

Step 6: Repeat step 5 for their perspective AFTER reviewing the questions.

- Focus questions on individuals who changed their selection after reviewing the questions. As **“Was there a particular question that made you change your answer?”**

Step 7: Repeat step 5 with treatment prioritizations.

- Ask “What pattern is there in the priorities of care?

Step 8: Ask, “What effect do these disparities/differences of opinion have on patient care? On Patient outcome? On unit efficiency?

Step 9: Do these effects matter? If so, how might we address them or improve our care? What tools or processes might help?

Part III

Step 10: “Based on our preliminary data, we have a hunch that improving dialogue about identifying severity of illness using certain features and prioritizing care accordingly might help.”

Provide the feature and treatments tools (V1 or V2). Ask the group to “review the tools we have provided for familiarity. Please note, that in each tool, some of the scales are REVERSED. Also, on the treatment scales, white categories on both tools represent solid representations from the CCST data analysis with researcher additions in brackets, light grey a solid representation but with research modification or addition (in brackets), and dark grey a weak representation from the CCST data and with moderate to significant researcher modifications/additions (bias). When you are done, I will present another case.”

Present case 3.

Ask them to “complete the features tool by placing an X anywhere on any of the scales below that indicate your estimate of the patient’s condition. You do not have to rate every scale. If a description is missing on that scale that you would use/think is important, please add it.”

Ask them to turn over the Features question page and complete the demographics at its top and the severity of illness scale using the tool provided.

Ask them to “complete the treatments tool by placing an “x” anywhere along the scales that indicate your estimate of what to do for the patient today. Text in each section is organized by objective/goal in bold type, recommendations in regular type, and considerations in italic type. Please circle the specific objective/goal/recommendation/consideration that you would use for this patient. If the

treatment you would provide is not available, please write it in. Once you have completed these, please indicate your assessment of the treatment's priority by writing a number (10 highest, 1 lowest) in a treatments corresponding box. You do not have to complete an item if you would not provide that treatment today.”

Part IV

Provide feedback tool. Ask the group to complete the demographics and to provide feedback.

Step 11: If time allows, discuss: “Could the tool help improve communication? How might it be used? What could be better/different?”

POIP First Group Interview Guide, groups 4-6

Cases 1 & 2

Introduction

This is a research project intended to understand how clinicians perceive patient condition and what treatments they give to patients accordingly. For approximately the next 60 min, we are going to review several cases and ask you to individually complete some questions about these cases. We will then discuss your responses. After our discussion, we will use a tool developed from our analysis of the preliminary that many of you have provided through the card sort exercises. We will then ask you to provide some feedback and, if time permits, we will discuss your feedback. If you wish to leave or stop participating at any time you are free to do so, your participation is completely voluntary (please see the approved interview consent script). Are there any questions?

Part I

Step 1: Give Group Interview Toolkit and cases for Groups 4-6 to the participants. Ask them to complete the demographics on pages where it appears. Present a case. Ask clinicians to place the patient on the Case 1 severity of illness scale. Remind them that “**there is no right or wrong answer, only your perception of the patient.**” (3 min)

Step 2: Turn to the feature questions. Review questions verbally with group and then ask “**After reviewing these questions, would you change your original score. Please record your new score, even if it did not change from the original, on scale ‘Case 1a’**” Remind them that “**there is no right or wrong answer, only your perception of the patient.**” (1 min)

Step 3: Turn to the list of treatment questions. Ask them to **prioritize and describe the treatments as they would provide them for this patient. If they have no opinion about a specific treatment, leave it blank.** Remind them that “**there is no right or wrong answer, only your perception of what you would do.**” (7 min)

Step 4: Turn to the second case. Present the case and allow the clinicians to complete steps 1-3 on their own and to look up when they are done. They have 7 min to complete.

Part II

Step 5: **Go back to the first page of the booklet.** Have clinicians place numbers in the available boxes above the scales (10 through 1). Ask them to share the number representing the case locations on the severity of illness scale with the group before considering the questions provided in step 2. Record Discuss differences/outliers for the most disparate case only. “**WHY did you place this patient where you did?**” Take notes on discussion.

- Focus questions re: feature on most discrepant/disparate values

Step 6: Repeat step 5 for their perspective AFTER reviewing the questions.

- Focus questions on individuals who changed their selection after reviewing the questions. As “**Was there a particular question that made you change your answer?**”

Step 7: Repeat step 5 with treatment prioritizations.

- Ask “What pattern is there in the priorities of care?

Step 8: Ask, “What effect do these disparities/differences of opinion have on patient care? On Patient outcome? On unit efficiency?

Step 9: Do these effects matter? If so, how might we address them or improve our care? What tools or processes might help?

Part III

Step 10: “Based on our preliminary data, we have a hunch that improving dialogue about identifying severity of illness using certain features and prioritizing care accordingly might help.”

Provide the feature and treatments tools (V1 or V2). Ask the group to “**review the tool we have provided for familiarity. Please note, that each scale is organized in the same direction (“worst” to “best”) – this may cause you to align or organize your thoughts accordingly but do not do so if you do not agree. Also, on the treatment scales, white categories on both tools represent solid representations from the CCST data analysis with researcher additions in brackets, light grey a solid representation but with research modification or addition (in brackets), and dark grey a weak representation from the CCST data and with moderate to significant researcher modifications/additions (bias). When you are done, I will present another case.**”

Present case 3.

Ask them to “**First, complete the severity of illness tool by placing an X anywhere on any of the scales below that indicate your estimate of the patient’s condition. You do not have to rate every scale. If a description is missing on that scale that you would use/think is important, please add it.**

Using the severity of illness tool, place a summary “X” on the SOI scale. Then, move on to the treatments tool.

Please complete the treatments tool by placing an “x” anywhere along the scales that indicate your estimate of what to do for the patient today. Text in each section is organized by objective/goal in bold type, recommendations in regular type, and considerations in italic type. Please circle the specific objective/goal/recommendation/consideration that you would use for this patient. If the

treatment you would provide is not available, please write it in. Once you have completed these, please indicate your assessment of the treatment's priority by writing a number (10 highest, 1 lowest) in a treatments corresponding box. You do not have to complete an item if you would not provide that treatment today.”

Part IV

Provide feedback tool. Ask the group to complete the demographics and to provide feedback.

Step 11: If time allows, discuss: “Could the tool help improve communication? How might it be used? What could be better/different?”

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Case 1

Please place an "X" on the scale below where you perceive the patient to be. There is no right or wrong answer, only your perception of where the patient is:

Case 1-Severity of Illness



STOP HERE until instructed to move on.

Please review the feature questions below in the context of this case. After you review them, please place an "X" on the severity of illness scale below indicating where you think the patient is. There is no right or wrong answer, only your perception of where the patient is.

- Are the patient's diagnoses and problems worse/getting worse (i.e. increasing in number or severity) or are they getting better (i.e. decreasing in number or severity)?
- Does the patient have many, few, or no organ failure?
- If the patient is on mechanical ventilation, is it high? Increasing or maintaining at a high level? Decreasing? None or chronic?
- Is the patient paralyzed, comatose, or sedated? Alert/Normal?
- What is the patient's General Condition (Unstable/Getting worse vs. Baseline/Normal)?
- What's the patient's acuity/activity level (very busy, multiple nurses) or minimal?
- Do the labs show the patient to be in shock or have a life threatening derangement?
- Are the patient's wounds small with minimal wound care?
- Is the patient tolerating rehab? Going to the Gym?
- Does the patient have many monitors/IVs/Lines or very few?

Case 1a-Severity of Illness

STOP HERE until instructed to move on.

Clinician Type _____

Date: _____

Experience (Years since graduation. "0" if in school): _____

Please review the questions below. Prioritize their importance with respect to the case presented in terms of their importance today. Then fill in the details of that treatment ("what would you do?") If you do not have an opinion about a specific treatment, please skip it (leave it blank). There is no right or wrong answer, only your perception of what you would do for the patient.

Treatment Perceptions Case 1		
	Priority (High, Middle, Low)	Define Objective/Task ("What to do?")
What should the lab set and frequency be today?		
How should we provide nutrition today?		
What rehabilitation should we do today?		
What's the objective of mechanical ventilation today (mode/settings & liberation plan)?		
How should we provide analgesia and sedation today?		
How much sleep should this patient get tonight and how should we support sleep?		
What wound care should this patient get, when, how quickly, and with what adjuncts for comfort?		
What monitors should this patient have?		
What type of venous access should this patient have?		
How should we prescribe fluids for this patient?		
What medication strategy should we use (Continuous, Scheduled, PRN, IV, Enteral, PO, etc.)? You can mix and match these.		
How should we provide Renal Replacement therapy if the patient is on it?		

Move on to the next page.

STOP HERE

Until instructed ☺

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Case 2

Please place an "X" on the scale below where you perceive the patient to be. There is no right or wrong answer, only your perception of where the patient is:

Case 2-Severity of Illness



Move to the next page.

Please review the feature questions below in the context of this case. After you review them, please place an "X" on the severity of illness scale below indicating where you think the patient is. There is no right or wrong answer, only your perception of where the patient is.

- Are the patient's diagnoses and problems worse/getting worse (i.e. increasing in number or severity) or are they getting better (i.e. decreasing in number or severity)?
- Does the patient have many, few, or no organ failure?
- If the patient is on mechanical ventilation, is it high? Increasing or maintaining at a high level? Decreasing? None or chronic?
- Is the patient paralyzed, comatose, or sedated? Alert/Normal?
- What is the patient's General Condition (Unstable/Getting worse vs. Baseline/Normal)?
- What's the patient's acuity/activity level (very busy, multiple nurses) or minimal?
- Do the labs show the patient to be in shock or have a life threatening derangement?
- Are the patient's wounds small with minimal wound care?
- Is the patient tolerating rehab? Going to the Gym?
- Does the patient have many monitors/IVs/Lines or very few?

Case 2a-Severity of Illness

Move to the next page

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Please review the questions below. Prioritize their importance with respect to the case presented in terms of their importance today. Then fill in the details of that treatment ("what would you do?") If you do not have an opinion about a specific treatment, please skip it (leave it blank). There is no right or wrong answer, only your perception of what you would do for the patient.

Treatment Perceptions Case 2		
	Priority (High, Middle, Low)	Define Objective/Task ("What to do?")
What should the lab set and frequency be today?		
How should we provide nutrition today?		
What rehabilitation should we do today?		
What's the objective of mechanical ventilation today (mode/settings & liberation plan)?		
How should we provide analgesia and sedation today?		
How much sleep should this patient get tonight and how should we support sleep?		
What wound care should this patient get, when, how quickly, and with what adjuncts for comfort?		
What monitors should this patient have?		
What type of venous access should this patient have?		
How should we prescribe fluids for this patient?		
What medication strategy should we use (Continuous, Scheduled, PRN, IV, Enteral, PO, etc.)? <i>You can mix and match these.</i>		
How should we provide Renal Replacement therapy if the patient is on it?		

Move on to the next page.

STOP HERE

Until instructed😊

But you can read the below if you have time....

Based on our preliminary data, we have a hunch that improving dialogue about identifying severity of illness using certain features and prioritizing care accordingly might help clinicians better communicate about differences in opinion and plan their daily care more effectively, efficiently, and reliably.

In a moment, you will review the tools we have provided for familiarity. Please note, that in each tool, some of the scales are **REVERSED**.

Also, on the scales,

- *white* categories on both tools represent solid representations from the CCST data analysis with researcher additions in brackets
- *light grey* categories represent a solid representation but with researcher modifications or additions (in brackets)
- *dark grey* categories a weak representation from the CCST data and with moderate to significant researcher modifications/additions (possible bias).

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Please complete the features tool by placing an X anywhere on any of the scales below that indicate your estimate of the patient's condition. You do not have to rate every scale. If a description is missing on that scale that you would use/think is important, please **add it**.

Patient's Current Severity of Illness®		Please make a noticeable "X" ANYWHERE on ANY of the scales below that indicates your estimate of the patient's condition right now.																
Diagnoses & Problems		Worse Quickly Worse = Increasing in number or severity										Better Better = Decreasing in number or severity						
Number of organ failures lungs, kidneys, heart/CV, bowel, brain, etc.		Many Present										None						
Mechanical Ventilation Support/FiO₂		High	[Increasing]/Maintaining									Low						None [or chronic]
Mental Status		Paralyzed, Comatose, Sedated										Delirious, Follows Commands						Alert, Normal, [Baseline]
General Condition		Baseline/Normal										Bad/Worse						
Acuity Level		Lower/Less Complex										Higher/More Complex						
Labs Show		Happening Fast	Acidosis, Shock, or Major Electrolyte derangement									[Nothing Specific]						
Wounds		Small/Minimal Wound Care										Necrosis/Fungus						
Rehabilitation		Not Tolerating	As much as tolerated									Walking					Gym	
Monitoring		Many Monitors/IVs/Line										Few Monitors/IVs/Lines						

Using the information from the scales above, please indicate where this patient is on the SOI scale below by placing an "X" anywhere along the scale.

Case 3-Severity of Illness

Move to the next page

Now, please complete the treatments tool by placing an "x" anywhere along the scales that indicate your estimate of what to do for the patient today. Text in each section is organized by **objective/goal in bold type**, recommendations in regular type, and *considerations in italic type*.

Please circle the specific objective/goal/recommendation/consideration that you would use for this patient. If the treatment you would provide is not available, please **write it in**.

Once you have completed these, please indicate your assessment of the treatment's priority by writing a number (10 highest, 1 lowest) in a treatments corresponding box. You do not have to complete an item if you would not provide that treatment today.

Treatments^R		1) Make a noticeable "X" ANYWHERE the scales below that indicates your estimate of what to do for the patient. Text in each section is organized by objective/goal in bold type, recommendations in regular type, and considerations in italic type.		
		2) Write a number from 1 (lowest) to 10 (highest) in the box for each category indicating its priority		
Labs		More Frequent Q4-Q6: ABG, VBG, SvO ₂ , Lactate, CBC, Chem Q12-24: LFT <i>*Pedi Tubes*, TEG, Coags, Fibrinogen</i>	Less Frequent Q12-Q24: ABG, CBC, Chem Q24-Qweek: LFT, Coag Weekly Nutrition Labs	As Needed/Intermittent QOD-QMW: CBC, Chem Qweek: LFT, Coag PRN Labs only
Nutrition		Full Support Enteral/PO Bolus + Supplements	Full Support 1-Enteral 2-TPN	Full Support Enteral or TPN <i>Trickle (20mL/hr) if in shock (vasopressors + elevated lactate)</i>
Monitoring		More [Maximize knowledge] A-Line, CVP, EV1000, EtCO ₂ Continuous SvO ₂ , Abdominal Pressures, <i>[TTE/IVC measurement]</i>	Middle [Avoid the un-expected] EtCO ₂ , A-Line, ±CVP	Less <i>[Decrease NBP measurements overnight]</i> Removing Foley
Rehabilitation		AT LEAST Range of Motion & Positioning <i>[Other care may be more important]</i>	**Goal is as much as tolerated** General Progression: ROM -> Sit/TLC -> Dangle/Tilt/Stand <i>[Rehab likely more important]</i>	March/Walk -> Gym & Outside! <i>[Rehab most important, DO NOT DELAY]</i>
Ventilation		Spontaneous/Liberated Transition to CPAP, extubate, or trach collar Tracheostomy, speaking valves	Wean/Decrease with Supported Mode Transition to APRV or CPAP or CPAP/PS <i>Decrease FiO₂ First, then PEEP/MAP</i>	Controlled/Assisted Low Tidal Volume (Vt) or VDR Open Lung Approach: Increase PEEP, Decrease Vt
Analgesia & Sedation		Controlled, More Asleep, Paralyzed <i>*As little pain as possible (4)</i> Continuous /Scheduled IV	Middle Section *As little pain as possible (3-4) IV PRN	Less Sedation <i>*As little pain as possible (3)</i> PO/Enteral or IV PRN
Sleep		As Able Day/Night Cycle	Goal 4-6 hours Avoid awakening 4-6 hrs at night Day/Night Cycle	Prioritize 6-8 hours Avoid awakening 6-8 hrs at night Day/Night Cycle <i>Sleep aid (trazadone, Lunesta, Remeron)</i>
Wound Care		Minimize need for wound care If possible, dressing that do not need changing daily <i>Propofol, ketamine, & remifentanyl drips</i>	Quick/Fast/First Precidex or ketamine infusions/boluses	Standard Care 1- IV PRN Fentanyl 1- IV PRN Midazolam 2- PO PRN Dilaudid 2- PO PRN Lorazepam
Venous Access		Minimize Infection Peripheral, fewer Power Wand PICC	Balance access and Infection If on CRRT, Triple lumen dialysis catheter as only central access	Adequate access Central Larger, more ports <i>If on CRRT, Triple lumen dialysis catheter</i>
Fluid Goal		Targeted Resuscitation/No over resuscitation Give fluids only to achieve defined goal <i>Lactate decrease by 10% in 4 hrs</i> <i>SvO₂ > 70%, UOP > 0.5ml/kg/hr</i> <i>Blood and Colloids to avoid over resuscitation</i>	Maintenance Assess intravascular volume status daily Define Goal of Positive, Negative, or even <i>Fluid challenge</i> <i>Diuretic challenge</i>	Self-Management of Fluid Balance No maintenance fluids
Medications		More continuous More IV	More Scheduled + PRN More IV + Enteral	More Scheduled + PRN More Enteral + IV
CRRT		Consider High Dose Therapy	Regular Dose	Breaks for activities and tests
				Consider IHD

Move to the next page

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Feedback

Part 1

This tool suggests that I should do something (anything) that I would not otherwise do: Yes No

If yes, please specify which suggestion(s) is(are)

Good:

Bad:

Neutral:

Part 2

A tool like this could help me think more clearly about the patient's condition: Yes No

A tool like this might help me better communicate with other clinicians about:

A patient's condition: Yes No

The priorities of care for a patient: Yes No

Differences of opinion about a patient's condition or priorities of care for a patient: Yes No

Other comments:

You're done (unless you'd like to stay to discuss your feedback)! Thanks! ☺

Clinician Type_____

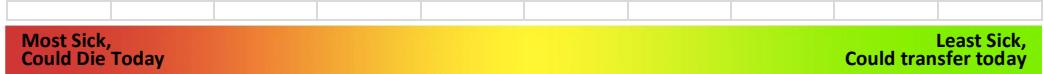
Date:_____

Experience (Years since graduation. "0" if in school):_____

Case 1

Please place an "X" on the scale below where you perceive the patient to be. There is no right or wrong answer, only your perception of where the patient is:

Case 1-Severity of Illness



STOP HERE until instructed to move on.

Please review the feature questions below in the context of this case. After you review them, please place an "X" on the severity of illness scale below indicating where you think the patient is. There is no right or wrong answer, only your perception of where the patient is.

- Are the patient's diagnoses and problems worse/getting worse (i.e. increasing in number or severity) or are they getting better (i.e. decreasing in number or severity)?
- Does the patient have many, few, or no organ failure?
- If the patient is on mechanical ventilation, is it high? Increasing or maintaining at a high level? Decreasing? None or chronic?
- Is the patient paralyzed, comatose, or sedated? Alert/Normal?
- What is the patient's General Condition (Unstable/Getting worse vs. Baseline/Normal)?
- What's the patient's acuity/activity level (very busy, multiple nurses) or minimal?
- Do the labs show the patient to be in shock or have a life threatening derangement?
- Are the patient's wounds small with minimal wound care?
- Is the patient tolerating rehab? Going to the Gym?
- Does the patient have many monitors/IVs/Lines or very few?

Case 1a-Severity of Illness

STOP HERE until instructed to move on.

Clinician Type _____

Date: _____

Experience (Years since graduation. "0" if in school): _____

Please review the questions below. Prioritize their importance with respect to the case presented in terms of their importance today. Then fill in the details of that treatment ("what would you do?") If you do not have an opinion about a specific treatment, please skip it (leave it blank). There is no right or wrong answer, only your perception of what you would do for this patient.

Treatment Perceptions Case 1		
	Priority (High, Middle, Low)	Define Objective/Task ("What to do?")
What should the lab set and frequency be today?		
How should we provide nutrition today?		
What rehabilitation should we do today?		
What's the objective of mechanical ventilation today (mode/settings & liberation plan)?		
How should we provide analgesia and sedation today?		
How much sleep should this patient get tonight and how should we support sleep?		
What wound care should this patient get, when, how quickly, and with what adjuncts for comfort?		
What monitors should this patient have?		
What type of venous access should this patient have?		
How should we prescribe fluids for this patient?		
What medication strategy should we use (Continuous, Scheduled, PRN, IV, Enteral, PO, etc.)? You can mix and match these.		
How should we provide Renal Replacement therapy if the patient is on it?		

Move on to the next page.

STOP HERE

Until instructed ☺

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Case 2

Please place an "X" on the scale below where you perceive the patient to be. There is no right or wrong answer, only your perception of where this patient is:

Case 2-Severity of Illness



Move to the next page.

Please review the feature questions below in the context of this case. After you review them, please place an "X" on the severity of illness scale below indicating where you think the patient is. There is no right or wrong answer, only your perception of where this patient is.

- Are the patient's diagnoses and problems worse/getting worse (i.e. increasing in number or severity) or are they getting better (i.e. decreasing in number or severity)?
- Does the patient have many, few, or no organ failure?
- If the patient is on mechanical ventilation, is it high? Increasing or maintaining at a high level? Decreasing? None or chronic?
- Is the patient paralyzed, comatose, or sedated? Alert/Normal?
- What is the patient's General Condition (Unstable/Getting worse vs. Baseline/Normal)?
- What's the patient's acuity/activity level (very busy, multiple nurses) or minimal?
- Do the labs show the patient to be in shock or have a life threatening derangement?
- Are the patient's wounds small with minimal wound care?
- Is the patient tolerating rehab? Going to the Gym?

Case 2a-Severity of Illness



- Does the patient have many monitors/IVs/Lines or very few?

Move to the next page

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Please review the questions below. Prioritize their importance with respect to the case presented in terms of their importance today. Then fill in the details of that treatment ("what would you do?") If you do not have an opinion about a specific treatment, please skip it (leave it blank). There is no right or wrong answer, only your perception of what you would do for this patient.

Treatment Perceptions Case 2		
	Priority (High, Middle, Low)	Define Objective/Task ("What to do?")
What should the lab set and frequency be today?		
How should we provide nutrition today?		
What rehabilitation should we do today?		
What's the objective of mechanical ventilation today (mode/settings & liberation plan)?		
How should we provide analgesia and sedation today?		
How much sleep should this patient get tonight and how should we support sleep?		
What wound care should this patient get, when, how quickly, and with what adjuncts for comfort?		
What monitors should this patient have?		
What type of venous access should this patient have?		
How should we prescribe fluids for this patient?		
What medication strategy should we use (Continuous, Scheduled, PRN, IV, Enteral, PO, etc.)? <i>You can mix and match these.</i>		
How should we provide Renal Replacement therapy if the patient is on it?		

Move on to the next page.

STOP HERE

Until instructed😊

But you can read the below if you have time....

Based on our preliminary data, we have a hunch that improving dialogue about identifying severity of illness using certain features and prioritizing care accordingly might help clinicians better communicate about differences in opinion and plan their daily care more effectively, efficiently, and reliably.

In a moment, you will review the tools we have provided for familiarity. Please note, that in each tool, some of the scales are **REVERSED**.

Also, on the scales,

- *white* categories on both tools represent solid representations from the CCST data analysis with researcher additions in brackets
- *light grey* categories represent a solid representation but with researcher modifications or additions (in brackets)
- *dark grey* categories a weak representation from the CCST data and with moderate to significant researcher modifications/additions (possible bias).
- Text in each section is organized by **objective/goal in bold type**, recommendations in regular type, and *considerations in italic type*.

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Please complete the tools below placing an X anywhere on any of the scales that indicate your estimate of the patient's condition and appropriate treatments. You do not have to rate every scale or indicate every treatment if you are not comfortable making that assessment. Please circle the description below the scale that you would use. If a description is missing on a scale that you would use or that you think is important, please **add it**. If there is a description that you do not think belongs, please **cross it out**.

* After completing the severity of illness scales, please indicate where this patient is on the summary scale by placing an "X" anywhere along the scale.

Once you have completed the treatment scales, please indicate your assessment of the treatment's priority by writing a number (10 highest, 1 lowest) in a treatments corresponding box. You do not have to complete an item if you would not provide that treatment today.

Move to the next page

Patient's Current Severity of Illness

Please make a noticeable "X" ANYWHERE on ANY of the scales below that indicates your estimate of the patient's condition right now.

10

Diagnoses & Problems		Worse Quickly Worse = Increasing in number or severity	Better Better = Decreasing in number or severity			
Organ Support is Mechanical Ventilation, CRRT, Vasopressors, Blood Products, Etc .		Maximal or Increasing rapidly	High or increasing in amount or number	Stable in amount or Number	Low or Decreasing in amount or number	None, Permanent or Chronic
Sedation Goal Is		Paralyzed or Deeply Sedated (RASS -5 to -4)	Arousable (RASS -3 to -2)	Interactive (RASS -2 to -1)	Normal or Participatory (RASS 0)	
General Condition		Unstable or getting worse quickly	Stabilized or Worse	Improving	Baseline or Normal	
Acuity Level		Highest/Very Complex	High or Increasing	Decreasing	Low	
Labs Show		Happening Fast Acidosis, Shock, or Major Electrolyte derangement Shock is present	Stabilization or are stable	Improvement [Nothing Specific]	Baseline or Normal	
Wounds		Necrosis/Fungus			Small/Minimal Wound Care	
Rehabilitation		Not Tolerating	As much as tolerated	Walking	Gym	
Monitoring		Many Monitors/IVs/Line	Few Monitors/IVs/Lines			
Case 3-Severity of Illness- Summarize the above scales	Most Sick, Could Die Today	Least Sick, Could transfer today				

Treatments

- 1) Make a noticeable "X" ANYWHERE the scales below that indicates your estimate of what to do for the patient. Text in each section is organized by objective/goal in bold type, recommendations in regular type, and considerations in italic type.
- 2) Write a number from 1 (lowest) to 10 (highest) in the box for each category indicating its priority

Labs		More Frequent Q4-Q6: ABG, VBG/SvO ₂ , Lactate, CBC, Chem Q12-24: LFT *Pedi Tubes*, TEG, Coags, Fibrinogen	Less Frequent Q12-Q24: ABG, CBC, Chem Q24-Qweek: LFT, Coag Weekly Nutrition Labs	As Needed/Intermittent QOD-QMW: CBC, Chem Qweek: LFT, Coag PRN Labs only	
Nutrition	Goal: Minimize loss of lean mass	Full Support Enteral or TPN Trickle (20mL/hr) if in shock (vasopressors + elevated lactate)	Full Support 1-Enteral 2-TPN	Full Support Enteral/PO Bolus + Supplements	
Monitoring		More [Maximize knowledge] A-Line, CVP, EV1000, EtCO ₂ , Continuous SvO ₂ , Abdominal Pressures, [TTE/JVC measurement]	Middle [Avoid the un-expected] EtCO ₂ , A-Line, ±CVP	Less [Decrease NBP measurements overnight] Removing Foley	
Rehabilitation		AT LEAST Range of Motion & Positioning [Other care may be more important]	**Goal is as much as tolerated** General Progression: ROM -> Sit/TLC -> Danlge/Tilt/Stand [Rehab likely more important]	March/Walk -> Gym & Outside! [Rehab most important, DO NOT DELAY]	
Ventilation	Goal: Minimize VILI, liberation ASAP	Controlled/Assisted Low Tidal Volume (Vt) or VDR Open Lung Approach: Increase PEEP, Decrease Vt	Wean/Decrease with Supported Mode Transition to APRV or CPAP or CPAP/PS Decrease FiO ₂ First, then PEEP/MAP	Spontaneous/Liberated Transition to CPAP, extubate, or trach collar Tracheostomy, speaking valves	
Analgesia & Sedation		Controlled, More Asleep, Paralyzed *As little pain as possible (4) Continuous /Scheduled IV	Middle Sedation *As little pain as possible (3-4) IV PRN	Less Sedation *As little pain as possible (3) PO/Enteral or IV PRN	Minimize Drugs *As little pain as possible
Sleep	Goal: Minimize Delirium	As Able Day/Night Cycle	Goal 4-6 hours Avoid awakening 4-6 hrs at night Day/Night Cycle	Prioritize 6-8 hours Avoid awakening 6-8 hrs at night Day/Night Cycle Sleep aid (trazadone, Lunesta, Remeron)	
Wound Care	Goal: Minimize wound infection, Suffering, & Heat loss	Minimize need for wound care If possible, dressing that do not need changing daily Propofol, ketamine, & remifentanyl drips	Quick/Fast/First Precidex or ketamine infusions/boluses	Standard Care 1- IV PRN Fentanyl 1- IV PRN Midazolam 2- PO PRN Dilaudid 2- PO PRN Lorazepam	
Venous Access		Adequate access Central Larger, more ports If on CRRT, Triple lumen dialysis catheter	Balance access and Infection If on CRRT, Triple lumen dialysis catheter as only central access	Minimize Infection Peripheral, fewer Power Wand or PICC	
Fluid Goal	Goal: Maintain organ perfusion; Avoid volume overload	Targeted Resuscitation/No over resuscitation Give fluids only to achieve defined goal Lactate decrease by 10% in 4 hrs SvO ₂ > 70%, UOP > 0.5ml/kg/hr Blood and Colloids to avoid over resuscitation	Maintenance Assess intravascular volume status daily Define Goal of Positive, Negative, or even Fluid challenge Diuretic challenge	Self-Management of Fluid Balance No maintenance fluids	
Medications	Goal: Minimize polypharmacy	More continuous More IV	More Scheduled + PRN More IV + Enteral	More Scheduled + PRN More Enteral + IV	More PRN More Enteral
CRRT		Consider High Dose Therapy	Regular Dose	Breaks for activities and tests	Consider IHD

Clinician Type_____

Date:_____

Experience (Years since graduation. "0" if in school):_____

Feedback

Part 1

This tool suggests that I should do something (anything) that I would not otherwise do: Yes No

If yes, please specify which suggestion(s) is(are)

Good:

Bad:

Neutral:

Part 2

A tool like this could help me think more clearly about the patient's condition: Yes No

A tool like this might help me better communicate with other clinicians about:

A patient's condition: Yes No

The priorities of care for a patient: Yes No

Differences of opinion about a patient's condition or priorities of care for a patient: Yes No

Other comments:

You're done (unless you'd like to stay to discuss your feedback)! Thanks! ☺

Case 1 (M-3)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

53 yo man with multiple co-morbidities including cirrhosis with portal gastrophathy from a h/o alcoholism and hepatitis C, severe psoriasis, severe MR and CHF, recent pneumonia/sepsis complicated by ESRD, and a recent diagnosis of cryptogenic organizing pneumonia for which he was started on steroids and Bactrim for PJP prophylaxis. He subsequently developed an exfoliating rash c/w Stevens Johnson syndrome (60% involvement, 10% open). He is now HD 6 without major issues.

Past 24 hour events:

- No major issues. Overall stable/unchanged.

A summary by organ system follows:

Neuro: Alert, oriented, non-cooperative (by choice), pain well controlled.

Resp: Room Air, no issues.

CV: No issues.

GI: Tolerating full enteral feeds without issue.

Renal: Tolerating IHD without issue; 2L off last without problem.

Endo: On systemic, high dose steroids (40mg BID) for pneumonia and cyclosporine for psoriasis/SJS.

Heme: On Fondaparinux for possible HIT, although HIT antibodies negative. Epoprostenol for ESRD.

ID: On atovaquone for PJP prophylaxis. Had klebsiella grow from buttock wound.

T/L/D: Tunneled R IJ & L femoral TLC #5.

Case 2 (L-1)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

33 yo man now 6 hours into his hospitalization for a 5% burn, mostly superficial partial thickness to the dorsum of his hands and spots on his arms/chest, but also with a circumferential deep partial thickness burn to his RLE and full thickness to the lateral aspect of the same (approximately 2%). He has no PMH except that the injury occurred while he was intoxicated and after putting the flames to his pants out with his hand, he passed out for 6 hours before presenting to the hospital.

Past 24 hour events:

- Local cleaning/debridement
- Admitted for neurovascular checks
- Placed on maintenance fluids and PO pain medications; ate breakfast, ambulated to the chair for breakfast without assistance

A summary by organ system follows:

Neuro: Awake, interactive, appropriate. GCS 15. On Tylenol, motrin, and PRN oxycodone

Resp: Room air, no issues.

CV: Normal Heart-rate and blood pressure.

GI: Ate full breakfast.

Renal: Spontaneously voided 300mL this AM (held own urinal). Normal electrolytes on admission and with AM labs.

Endo: No issues.

Heme: Normal CBC and Coags on admission. Not repeated with AM labs.

ID: No issues.

Wounds: Dressed in silverlon to the RLE and bacitracin to upper extremity wounds.

T/L/D: PIV x 1.

There is no handoff tool for this patient.

Case 3 (M-2)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

33 yo man with no significant PMH now HD # 15 & POD #5 from E&G. He was involved in a car fire (by report no MVC) and presented with ~30% TBSA burns to his chest, arms, hands, upper back, and face, plus a grade 2 inhalation injury, ocular involvement, and vertebral artery dissection incidentally found on CT Traumagram.

Past 24 hour events:

- Worse this morning requiring re-intubation for hypoxic respiratory failure. He improved post intubation. CXR c/w hypervolemia given gradual worsening over the past 2-3 days with increased peri-hilar "fluffing," but also infection given his persistent fever and robust cellular inflammatory response. Also had one episode of hypotension (MAPs 50s-60), during tilt, but this resolved rapidly after laying flat.
- UOP had robust response to diuretic challenge without hypotension this morning.

A summary by organ system follows:

Neuro: Sedated on Precidex, ketamine, and propofol with PRN hydromorphone. His goal for sedation has been to get him to breath spontaneously and to be interactive without risk of harming himself.

Resp: Intubated early this morning for hypoxia. CMV VT 500 RR 20s-30s, PEEP 10. CXR with bilateral, fluffy infiltrates in a more central distribution. No air-bronchograms. He is on Acetelycysteine, albuterol, and ipratropium nebs.

CV: Lactate normal, MAPs improve after 250mL bolus 5% albumin and reducing sedation

GI: Poorly tolerant of enteral feeds (high residuals of 200s-300s). Dobhoff not post-pyloric. No BM x 5 days. Low albumin.

Renal: Good UOP, high sodium, responds well to Lasix (700 mL first hour after 40mg Lasix)

Endo: No insulin requirement

Heme: Thrombocytosis to 1.1 million. WBC increasing (11-> 18).

ID: Started on broad spectrum antibiotics (vanc/imipenam/amikacin) this morning.

Wounds: Dressed 5% SMS, ears have Sulfamylon cream, donors in xeroform.

T/L/D: Line day 5 today (arterial R Femoral, Central L Femoral)

Case 1 (A-1)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

53 yo man with multiple co-morbidities including cirrhosis with portal gastrophathy from a h/o alcoholism and hepatitis C, severe psoriasis, severe MR and CHF, recent pneumonia/sepsis complicated by ESRD, and a recent diagnosis of cryptogenic organizing pneumonia for which he was started on steroids and Bactrim for PJP prophylaxis. He subsequently developed an exfoliating rash c/w Stevens Johnson syndrome (~60% involvement). He is now HD #10 with approximately 10% open wounds.

Past 24 hour events:

- Over the past 24 hours, he has gotten worse.
- After IHD, he became tachycardic to 130s. SvO_2 Decreased from 70s to 40s. He was given 5% albumin 250 mL x 2 without change in his HR (120s-130s). SvO_2 initially increased following boluses from 40s to 60s, but subsequently declined and his lactate remained 5-6.
- Overnight developed increasing work of breathing. Such that he is now on Non-Invasive CPAP and his FiO_2 increased from room air to 60%.
- WBC dropped from 6 to 3.
- His mental status changed from answering questions appropriately and in sentences to yes/no answers with gasping breaths.

A summary by organ system follows:

Neuro: GCS 13 (E3, V4, M6). Somnolent. Answers in one or two words, sometimes inappropriately.

Resp: CPAP. RR 27-35. CXR with new/worsening LLL infiltrate. Will likely need to intubate for airway protection and increasing FiO_2 . Suspect Pneumonia.

CV: MAPs decreasing (60s-70s to 50s). Started vasopressin. Giving 1 unit of blood.

GI: Gastric residuals increased to 400 (previously < 100). Tube feeds stopped.

Renal: Had IHD yesterday. Plan for 3L off, but only got 700 mL limited by hypotension.

Endo: On lantus and sliding scale insulin.

Heme: PLT count down to 33 from 39. Slow, steady decline attributed to IHD and Cirrhosis. No bleeding apparent (non in gastric aspirate or stool)

ID: On atovaquone for PJP prophylaxis. Had klebsiella grow from buttock wound.

Wounds: Dressed in silver nitrate.

T/L/D: Tunneled R IJ & L IJ TLC. An EV1000 is being set-up for monitoring.

Case 2 (M-1)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

64 yo female with PMH sig for HTN, DM2, and HLP who is now HD # 41 for necrotizing fasciitis of her R leg. Her hospital course has been complicated by poor wound healing. She is POD#3 from her last washout, debridement, and autograft placement to her wound (donor from flank) and wound vac placement. Her wounds are approximately 25% of her TBSA and are open.

Past 24 hour events:

- CRRT fluids changed from 454 to 453/454 (50/50 split) for persistent hyperkalemia.
- Otherwise stable/unchanged from yesterday.
- She tilted yesterday to 40 degrees without a problem.

A summary by organ system follows:

Neuro: multifactorial encephalopathy (primarily hypoxic due to cardiac arrest earlier in hospital course) which is improving. GCS 15, "A&O x3," on amantadine, mirtazapine (remeron) for sleep, PRN morphine and PRN lorazepam

Resp: on CPAP. Goal is trach collar today. Her CXR is unchanged from the last two days with left lower lobe infiltrate and increase perihilar fullness consistent with her volume status.

CV: No real issues. Had problem with hypotension/bradycardia 2 days ago for which broad spectrum antibiotics were started. A lactate draw this morning was normal. Cardiac arrest earlier in hospital course.

GI: On full enteral feeds and appropriate supplements. Not on oxandralone due to increased alk phos and direct bilirubin (thought to be intrahepatic cholestasis). Has functioning colostomy.

Renal: Has AKIN 3 renal failure on CRRT 3L RFR, UF 100, RF 50/50 453/454 given 50% pre/50% post filter on PrismaFlex, on trisodium citrate for anticoagulation. She is hypervolemic abdominal edema on exam

Endo: on stable insulin drip

Heme: stable, no issues

ID: On imipenam, amikacin, and vancomycin for event above. Cultures of blood, urine, and sputum thus far negative x 2 days.

Wounds: Wounds under NPWD.

T/L/D: has RIJ HD catheter, L Femoral central line, and no a-line due to inability to obtain, NGT/dohoff tube

Case 3 (M-2)

When listening to the case, try to take the information at face value. If you need clarifying questions answered, you may ask me (the researcher). For additional details regarding labs, procedures, medications, I/Os, etc., refer to the handoff tool provided.

HPI:

33 yo man with no significant PMH now HD # 15 & POD #5 from E&G. He was involved in a car fire (by report no MVC) and presented with ~30% TBSA burns to his chest, arms, hands, upper back, and face, plus a grade 2 inhalation injury, ocular involvement, and vertebral artery dissection incidentally found on CT Traumagram.

Past 24 hour events:

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CV: Lactate normal, MAPs improve after 250mL bolus 5% albumin and reducing sedation

GI: Poorly tolerant of enteral feeds (high residuals of 200s-300s). Dobhoff not post-pyloric. No BM x 5 days. Low albumin.

Renal: Good UOP, high sodium, responds well to Lasix (700 mL first hour after 40mg Lasix)

Endo: No insulin requirement

Heme: Thrombocytosis to 1.1 million. WBC increasing (11-> 18).

ID: Started on broad spectrum antibiotics (vanc/imipenam/amikacin) this morning.

Wounds: Dressed 5% SMS, ears have Sulfamylon cream, donors in xeroform.

T/L/D: Line day 5 today (arterial R Femoral, Central L Femoral)

Case 1 (M-3)

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HPI:

53 yo man with multiple co-morbidities including cirrhosis with portal gastrophathy from a h/o alcoholism and hepatitis C, severe psoriasis, severe MR and CHF, recent pneumonia/sepsis complicated by ESRD, and a recent diagnosis of cryptogenic organizing pneumonia for which he was started on steroids and Bactrim for PJP prophylaxis. He subsequently developed an exfoliating rash c/w Stevens Johnson syndrome (60% involvement, 10% open). He is now HD 6 without major issues.

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ID: On atovaquone for PJP prophylaxis. Had klebsiella grow from buttock wound.

T/L/D: Tunneled R IJ & L femoral TLC #5.

Case 2 (M-2)

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33 yo man with no significant PMH now HD # 15 & POD #5 from E&G. He was involved in a car fire (by report no MVC) and presented with ~30% TBSA burns to his chest, arms, hands, upper back, and face, plus a grade 2 inhalation injury, ocular involvement, and vertebral artery dissection incidentally found on CT Traumagram.

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Heme: Thrombocytosis to 1.1 million. WBC increasing (11-> 18).

ID: Started on broad spectrum antibiotics (vanc/imipenam/amikacin) this morning.

Wounds: Dressed 5% SMS, ears have Sulfamylon cream, donors in xeroform.

T/L/D: Line day 5 today (arterial R Femoral, Central L Femoral)

Case 3 (M-1)

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HPI:

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Endo: on stable insulin drip

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ID: On imipenam, amikacin, and vancomycin for event above. Cultures of blood, urine, and sputum thus far negative x 2 days.

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T/L/D: has RIJ HD catheter, L Femoral central line, and no a-line due to inability to obtain, NGT/dohoff tube